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(54) Abstract Title
A cubicle which may fit into an interlocking arrangement with similar units

(57) A cubicle has a generally convexly curved wall portion and a generally concavely curved wall portion such that two such cubicles may be placed together with the convex wall portion of one cubicle fitting with the concave portion of the other. A door 12 may be incorporated into the convexly curved wall portion. An array of such cubicles may be formed. A lavatory 14, basin 18 and translucent lighting screen 20 may be provided. Alternative uses for the cubicles are suggested, such as cupboards, shower cubicles, changing rooms, lockers or telephone booths.

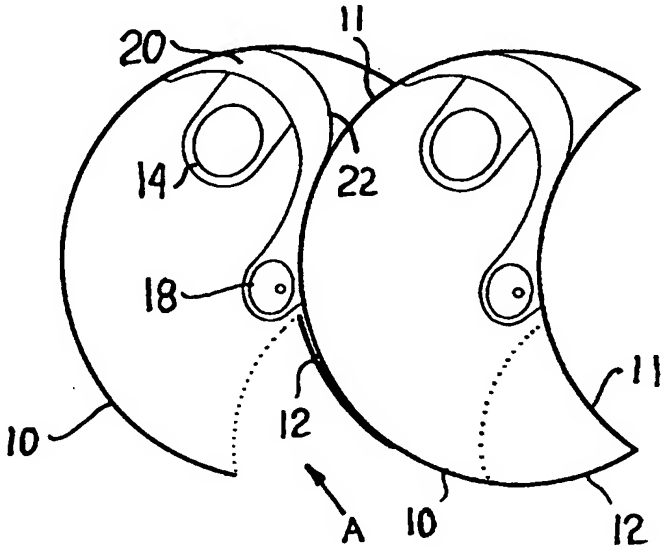

Fig. 1

GB 2 348 215 A

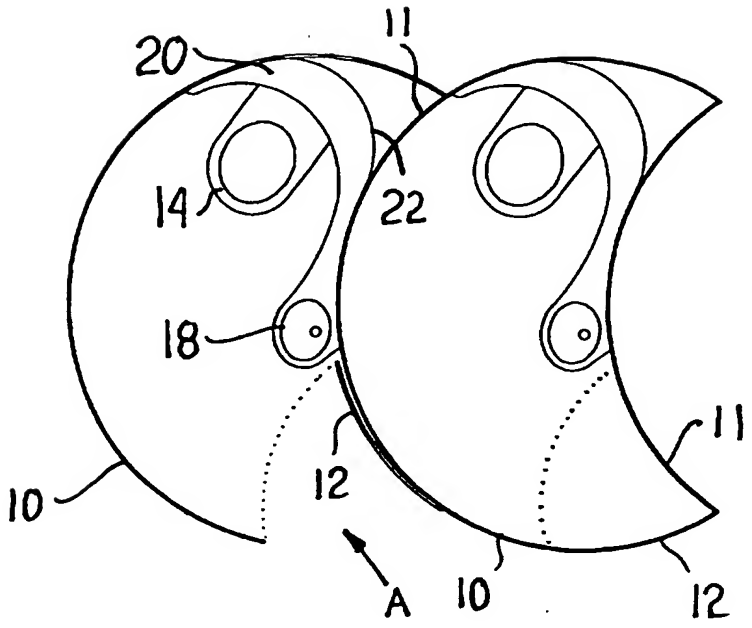

Fig. 1

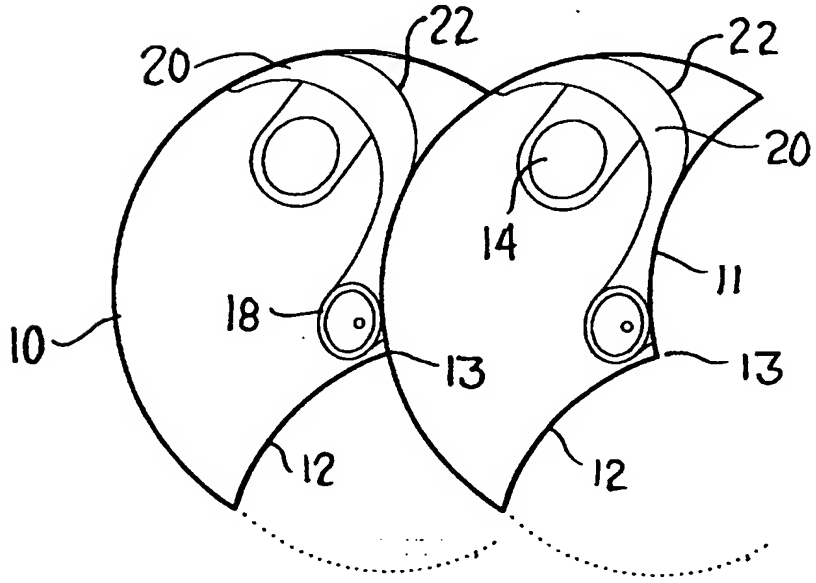

Fig. 2

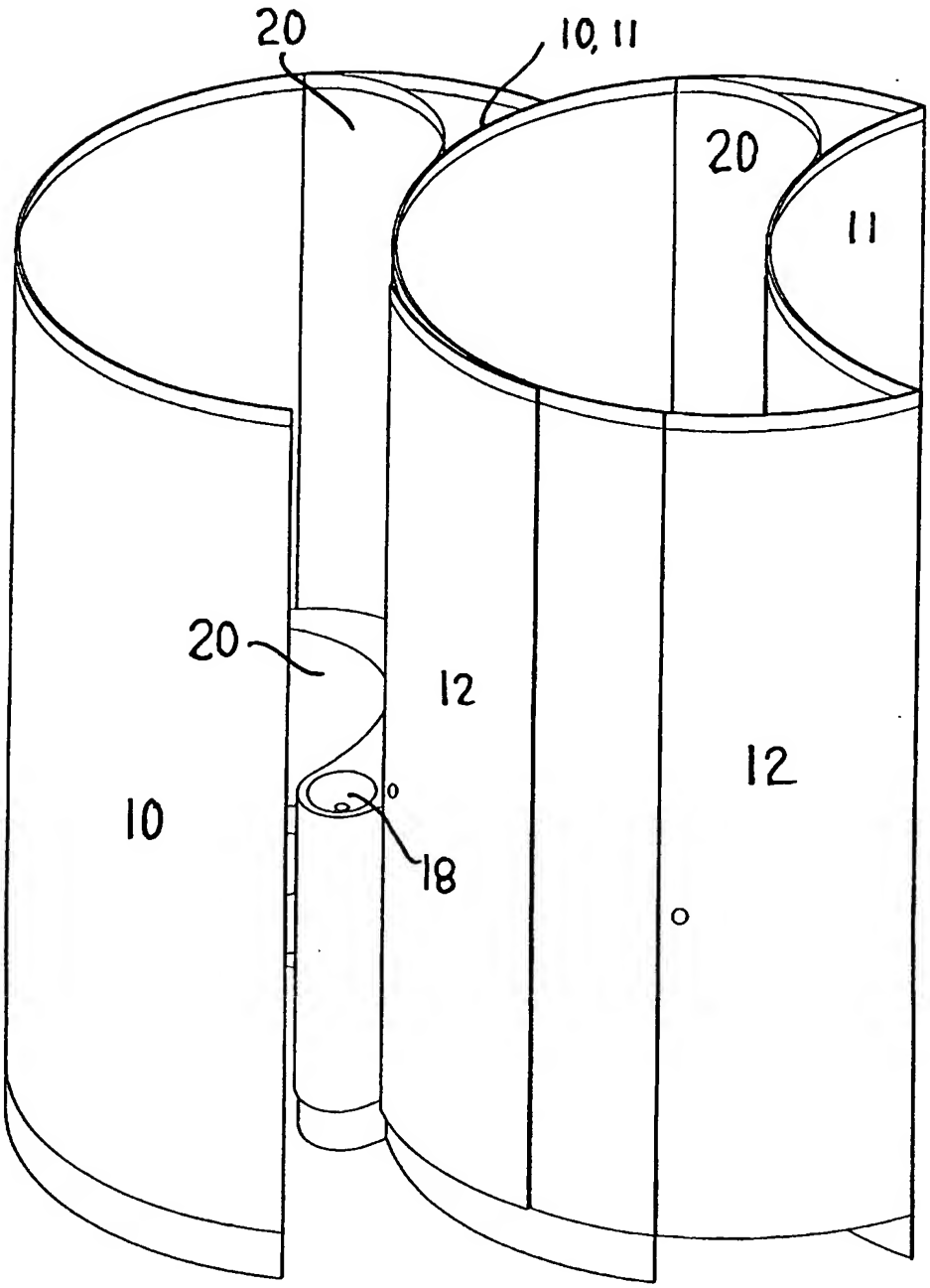

Fig. 3

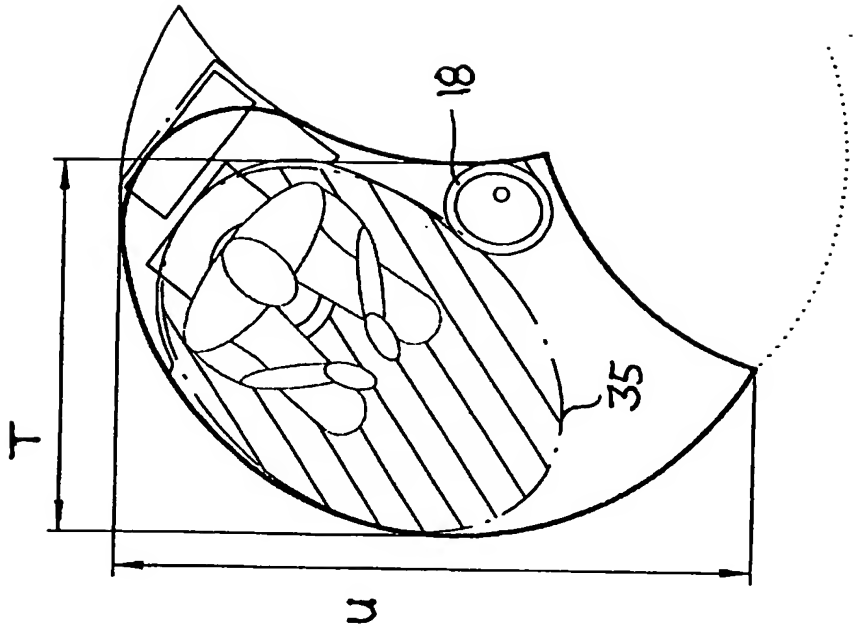

Fig. 4b

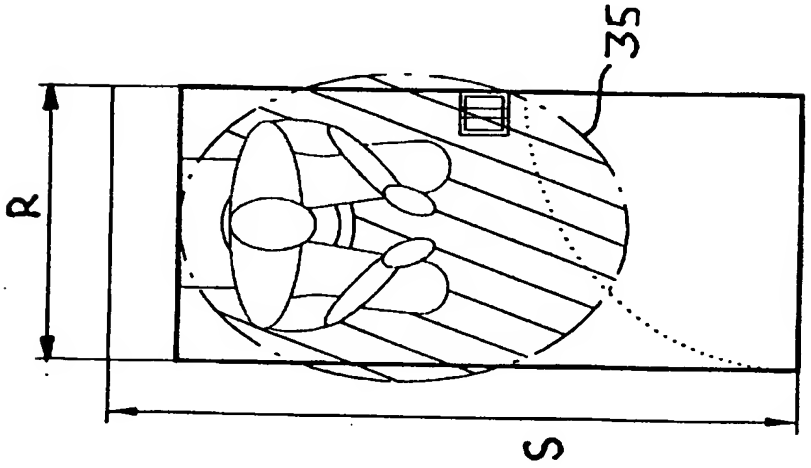

Fig. 4a

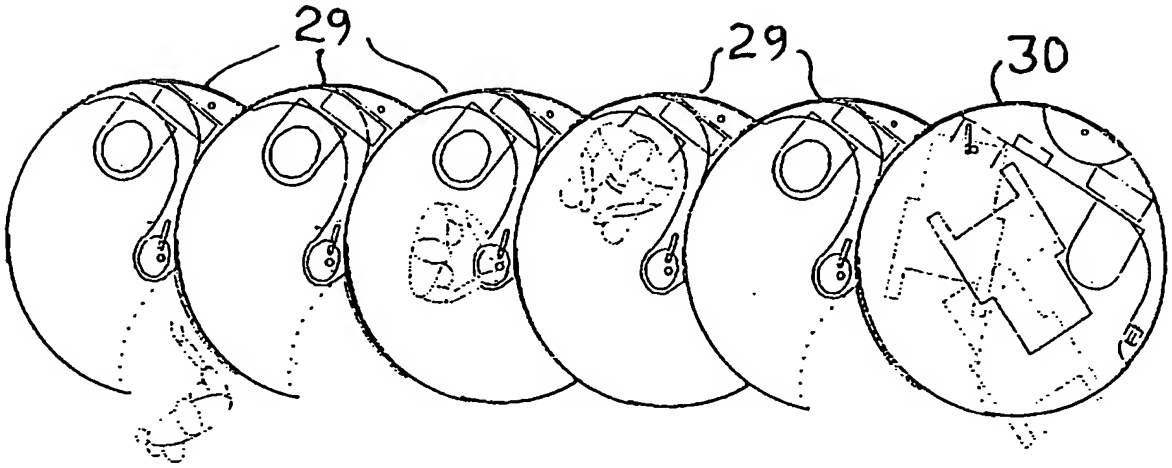

Fig. 5

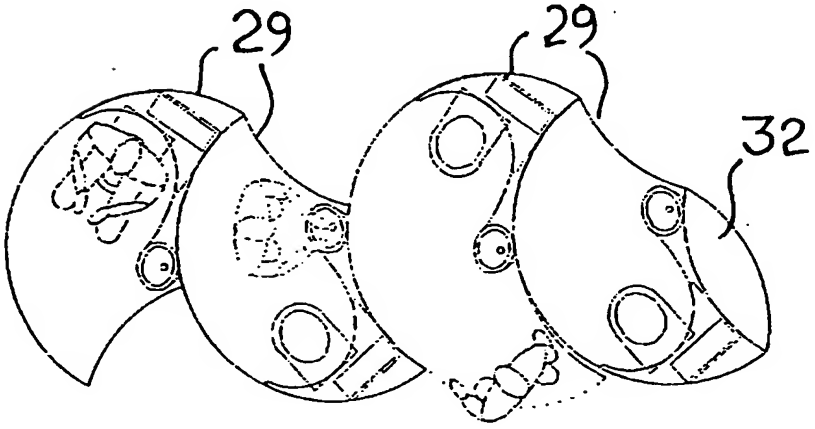

Fig. 6

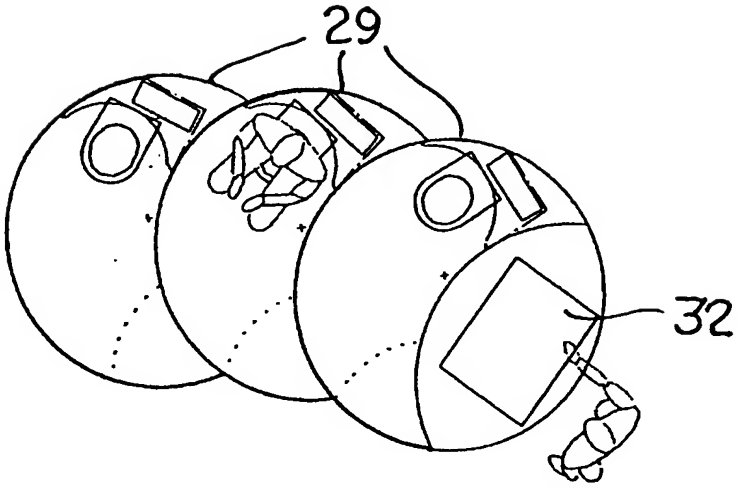

Fig. 7

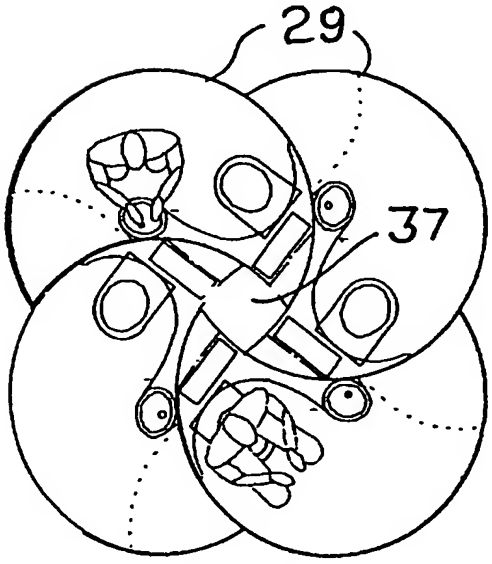

Fig. 8

Cubicles

The present invention relates to cubicles.

A major concern of modern architects is to make the most efficient use of space. Not only is land itself expensive, but making a building or part of a building larger than necessary results in the use of additional building materials.

Where large numbers of people congregate, especially in buildings such as airport terminals, shopping malls and such like, a significant amount of space is devoted to lavatory facilities, commonly in the form of cubicles.

A conventional type of lavatory facility is installed in a chosen room, this room usually being rectilinear in plan. Rows of cubicles are erected along some of the walls of the room. A row of cubicles is aligned so that each cubicle's door, and any front wall included (for example upon which to hinge the door) is aligned, and the doors run parallel to the room's rear wall upon which the cubicles have been located. The cubicles are divided into discrete spaces by side walls which run perpendicularly between the rear wall and the doors. If the cubicle row has been placed in a corner so that one end of the row abuts a wall of the room running perpendicular to the rear wall, this room wall may make a side wall of the end cubicle unnecessary.

Cubicles are often chosen to be either square or rectangular in plan, because squares and rectangles may be packed together indefinitely in a close formation with no unfilled regions between them. Cubicles used for other uses are similarly arranged.

A typical cubicle may measure 800 mm by 2000 mm, thus having a total area of 1.6 m^2. It is apparent that the ellipse representing the required space for the comfort of a 95th percentile man will not fit into such a space.

The object of the present invention is to provide a cubicle which provides an efficient use of the space in which it is to be installed.

According to the present invention there is provided a cubicle or the like having a generally convexly curved wall portion and a generally concavely curved wall portion such that two such cubicles can be placed together with the convexly curved wall portion of one of the cubicles fitting with the concavely curved wall portion of the other cubicle.

Preferably the convexly curved wall portion concavely curved wall portion have a similar uniform curvature.

Preferably a door is incorporated into the convexly curved wall portion.

According to another aspect of the invention, there is provided a group of adjoining cubicles as defined above

A cubicle embodying the invention will now be described, by way of example, with reference to the drawings of which;

Figure 1 is a plan view of two cubicles,

Figure 2 is a plan view of an alternative embodiment of two cubicles,

Figure 3 is a perspective view of the two cubicles shown in Figure 1,

Figure 4a is a plan view of a conventional cubicle,

Figure 4b is a plan view of a cubicle embodying the invention,

Figure 5 shows an arrangement of a group of cubicles,

Figure 6 shows another arrangement of a group of cubicles,

Figure 7 shows a further arrangement of a group of cubicles,

Figure 8 shows a further arrangement of a group of cubicles.

For a person to feel comfortable when seated in a lavatory, and to be allowed the freedom to move his limbs, it is convenient to imagine an elliptical shape surrounding that person. A comfortable ellipse has a major axis length of 1300 mm, and minor axis length of 900, this being sufficient for a large majority of people (1120 mm by 813 mm being recommended for a male in the 95th percentile as referred to in Human Dimension and Interior space, Design reference standards, Panero and Zelnik, The Architectural Press Ltd 1979)

Referring to Figures 1 and 3, each cubicle comprises a wall, which, in plan, is a circle 10 having an arc 11 of the same curvature excised, so as to form a crescent The excising arc 11 falls short of the centre of the circle 10. Similar cubicles can be fitted in an interlocking arrangement as shown, The convex portion of one cubicle fitting with the concave portion of the adjoining cubicle. The description of the cubicles' walls as being either concave or convex is with respect to one looking at the cubicle from outside of the cubicle.

A portion of the circle's wall is hinged at one of the cubicle's cusps, to provide a door 12 to the cubicle.

A toilet bowl 14 is situated at the opposite side of the crescent to the door. The cistern and flushing mechanism are situated as far into the cusp of the crescent as possible. A basin 18 is provided against the excising wall 11 close to the centre of the circle 10 describing the cubicle.

The cubicle may most conveniently be entered by initially walking through the door at an angle of about 45° to the alignment of the cubicle row, that is, walking in the direction of the arrow A, which is approximately tangential to the curvature of the excising wall 11 at the region of the door 12.

The cistern, flushing mechanism, and other pieces of plumbing for the toilet and sink, are hidden behind and beneath a cabinet 20, the vertical surface of which follows a curve. The cabinet also incorporates a paper dispenser and waste paper basket within convenient reach of a person seated at the toilet or using the hand basin. The point of the cusp is enclosed behind a curved lighting screen 22 which extends upwards to the same height as the other walls of the cubicle.

The region common to two adjoining cubicles, that is the excised wall 11 of one and a portion of the circle 10 of the other, ideally comprises a single thickness wall.

In order to erect the cubicles, the circular portions 10 are brought as panels to the intended site, and set into the ground by conventional means. Part of the circular portion of each cubicle forms the excising wall of an adjoining cubicle, except in the case of the end cubicle. The curved shape, due to the span between what will form the points of the cusps, and in the perpendicular direction to the depth of the crescent shape, is stable when resting upon the ground. Furthermore, the curved shape gives the structure great rigidity along its vertical axis. The curved panels then, once secured in the ground by conventional means, have sufficient structural strength to stand without the additional support of nearby walls, or props or supports set in the ground.

Referring to Figure 5, many such cubicles could be interlocked in such a way. At one end of such a row of cubicles 29, the last cubicle 30 could be a complete circle in plan, part of its curvature being a door larger than those featured in the crescent shaped cubicles, thus allowing wheelchair access. Alternatively, excised portion of the circular shape could be utilised in another way, such as keeping a store cupboard there, or installing a vending machine 32 as shown in Figure 7, or locating a further sink there.

The walls of the cubicle are made from toughened or laminated translucent glass. The walls extend from the floor up to a height of approximately 2 m. The lighting screen is similarly made from translucent glass, and a light placed behind it (that is, in the cusp) illuminates the crescent. The cubicles could be placed in a room dedicated to lavatory facilities, or they could be placed in the centre of a room, 'free standing'.

Referring to Figure 2, in an alternative embodiment the door 12 is hinged to the excised wall 11 at a point 13 on the wall somewhat short of the hand basin. The door has a similar curvature to the excised wall and may rest close against the excised wall when the door is open. When the door is closed, the plan shape of the cubicle is that of a crescent having had a cusp truncated by a line of similar curvature to both the already excised portion and the original circle, so that a shape having three cusps remains.

A typical conventional rectangular cubicle, as shown in Figure 4a, having a width (denoted here by arrow R) of 800 mm, and a length (denoted by arrow S) of 2000 mm, has a total area of 1.6 m^2, and a usable space of 1.44 m^2. The ellipse 35 representing the freedom of movement necessary for a male within the 95th percentile does not fit entirely within the cubicle, indicating that such a cubicle would be uncomfortably cramped for some people. Referring to Figure 4b, an embodiment of the cubicle of the invention, having a width across the region indicated by arrow T of 1090 mm, and a length (denoted by arrow U) of 1850 mm, also has a total area of 1.6 m^2, but has a larger usable area of 1.5 m^2. The ellipse surrounding the seated person now fits comfortably inside the bounds of the cubicle. Furthermore, the shape of the usable area is such that a sink may also be included in the cubicle, without impinging upon the ellipse.

The individual cubicles may be arranged into groups in a variety of ways. By having the doors placed on the opposite cusp, and the toilet similarly switched, in one half of the cubicles, the cubicles 29 may be arranged in an alternating arrangement as shown in Figure 6. An alternative arrangement for installing a vending machine 32 is also shown here. Figure 7 shows the cubicles arranged in a curved line. A group of

cubicles could be arranged in a line having a sufficient curvature for their number that they form a circular arrangement. This is shown in Figure 8 for a group of four cubicles, though a group as small as three may be similarly arranged. In such an arrangement a region 37 at the centre of the group is left free. This region may be used to provide common plumbing or other services for the cubicles.

Numerous other arrangements utilising the versatile nature with which these cubicles can be packed together are possible using the same principles. The shape of the cubicle may be varied without losing the advantages of the cubicle's efficient use of space and the versatile packing nature. For example, rather than circular, the cubicle could be based upon an elliptical shape, or a generally circular shape could be approximated by a polygonal shape.

The precise arrangement of the components may of course be varied whilst still benefiting from the principles herein disclosed. For instance, the hand basin in the cubicle could be fitted upon the convex wall, that is, at a point opposite the position the hand basin occupies in the above description, ideally at the point on the convex wall which is the greatest distance away from the concave wall. The hand basin may be either mounted upon the wall, or standing upon a standard.

Although described above as being made from glass, the walls of the cubicle could equally be made from a range of materials such as aluminium, ceramic tiles, concrete, or a plastic material. Similarly, conventional lighting could be substituted or used in addition to the lighting screen. The light screen, if included, could be made out of other translucent materials apart from glass, such as a plastics material. The cubicles could either be left open at the top, or have a ceiling included. The cubicles could also be erected for use outside of buildings. The floors of the cubicle could be composed of any conventional flooring material.

Other features concerned or associated with washing could be combined or adapted for use with the cubicles, such as substituting the toilet

for a shower unit. The cubicles could also be used for any purpose that a conventional cubicle is suitable for, such as cupboards, lockers, changing rooms, telephone boots, and other diverse uses. The size given in the specific embodiment is only intended to indicate the typical dimensions, and naturally these may be varied depending upon the particular requirements of a cubicle or group of cubicles, such as there intended use and the environment in which they are to be erected.

CLAIMS

1. A cubicle or the like having a generally convexly curved wall portion and a generally concavely curved wall portion such that two such cubicles can be placed together with the convexly curved wall portion of one of the cubicles fitting with the concavely curved wall portion of the other cubicle.

2. A cubicle or the like according to the previous claim wherein the convexly curved wall portion concavely curved wall portion have a similar uniform curvature.

3. A cubicle or the like according to any previous claim wherein a door is incorporated into the convexly curved wall portion.

4. A cubicle or the like according to any of claims 1 or 2 wherein a door is included which, when closed, forms a further concavely curved portion.

5. A cubicle or the like according to any previous claim wherein a hand basin or the like is included in the cubicle at or near concavely curved portion.

6. A cubicle or the like according to claim 5 wherein the hand basin or the like is included at or near the point where the distance from the convexly curved portion is the greatest.

7. A lavatory cubicle or the like according to any previous claim wherein lighting means is included in the cubicle at or near the region where the concave surface and the convex surface meet

8. A lavatory cubicle or the like according to claim 7 wherein lighting means is behind a translucent screen.

9. A group of adjoining cubicles according to any previous claim.

10. A cubicle or the like substantially as herein described and illustrated.

11. A group of adjoining cubicles substantially as herein described and illustrated.

12. Any novel and inventive feature or combination of features specifically disclosed herein within the meaning of Article 4H of the International Convention (Paris Convention).

The Patent Office

10

INVESTOR IN PEOPLE

Application No:	GB 9906819.9	**Examiner:**	D.J. Pisani
Claims searched:	1-11	**Date of search:**	29 June 1999

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.Q): E1D DCJ, DLDQW, DLDKN, DS

Int Cl (Ed.6): E04H

Other: Online: World Patents Index

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	DE4400049 A1 LUTHNER METALL-RECYCLING	

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.